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FARM CHEMICALS

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FSC's Rusty Pisle:
"We're Here to
Make a Profit!"

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FARM CHEMICALS

Volume 145 No. 4 April 1982

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AG CHEM DEALER/APPLICATOR

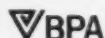
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THE COVER STORY

This month we revisit Rusty Pisle of Farm Service Center, Spencerville, OH—a dealer who was featured on our cover in 1973. Since then, his sales have risen 15-fold due to remarkable business acumen, innovation, technological advancement, and—basically—just keeping up with the times. His updated story begins on page 13.



MEMBER BUSINESS PUBLICATIONS AUDIT

The national business magazine for the fertilizer and pesticide industries, FARM CHEMICALS serves primarily manufacturers, formulators, mixers, dealers, and commercial applicators of fertilizers and pesticides, reaching those persons responsible for management, marketing, and production. Subscription rates are in the U.S., its possessions, \$16.00; in other countries, \$20.00. Established in 1894 as THE AMERICAN FERTILIZER and incorporating CROPLIFE and AG CHEM & COMMERCIAL FERTILIZER.

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expressed the view that this provision "is appropriate and important," one thought it should be terminated by a stroke of the "congressional guillotine," and one made no comment upon the disposition of the provision. All agreed, however, that the provision has not proved useful thus far.

The comments reviewed in these excerpts, though written in the present tense, refer mostly to the past, where the EPA is concerned. Developments associated with the change in administration after the hearing are not necessarily reflected.

Copies of Special Publication No. 9 are available upon request to individual CAST members. The publication is being distributed to EPA and institutional members of CAST.

Monte Carlo Model Analyses Aerial Drift

MODIFICATIONS in a laboratory model designed for analyzing aerial drift may provide a useful tool for designing agricultural spray rigs and flight procedures as well as establishing criteria for developing methods of application and targeting practices.

Walter Frost and Kao-Huah Huang of FWG Associates, Inc. have developed the Monte Carlo particle dispersion model (MoCaPD) with two features not found in current models. They provide the ability to predict a given particle size distribution and/or number density as a function of time and spatial position; and the ability to account for the characteristics of the nozzle or method of particle release.

In a paper presented at the 1981 winter meeting of the American Association of Agricultural Engineers, Frost and Huang described the basic model concept as consisting of plotting the time histories of various random particle trajectories related to a fixed coordinate system. The random functions of position and time, and of prevailing meteorological conditions are stored in a data file and used to carry out statistical analyses or "real-time" simulations.

A particularly unique feature of the model is the capability to account for the source characteristics. The nozzle particle output characteristics are inputs to the MoCaPD computer program. Thus, parametric studies of source particle size distributions, method of particle ejection, etc. are possible. At present, the model assumes the particle size remains constant along its trajectory. The potential for modeling condensation/evaporation, nucleation, coagulation, and inter-particle force effects along the trajectory exists.

Simulations, using the model, represented particle dispersion from an

aircraft with the characteristics of a Marsh Turbo Thrush outfitted with hollow cone disk-type TEEJET nozzles having a flat fan 8015 nozzle tip spray system. Eight nozzles located along the wing span were assumed. This nozzle has a $\frac{3}{8}$ -inch orifice diameter and an 80° spray angle at 40 psig. With insecticide applied at a rate of 1.5 gallons/minute, the exit velocity from the nozzle is approximately 12 meters/second. The initial velocity of the droplets exiting the nozzle was thus assumed to be 12 meters/second.

Flight conditions assumed for the simulation were level flight at 1.5 meters above the ground with two cross-wind conditions. For these conditions 100 particles each of 10, 18, 40, 80, 133, 160, and 300 microns, respectively, were released from each of the eight nozzle locations. The probability of a particle of given size landing at a prescribed position on the ground (that is, within 1-meter intervals perpendicular to the flight path) was computed. Turbulence levels corresponding to the mean wind speed and

a surface roughness length scale of 0.01 micron were superimposed upon the mean vortex wind field created by the aircraft. The flat fan nozzle tip was assumed to be pointing downward with the two-dimensional spray pattern perpendicular to the centerline of the aircraft.

Comparison of the model with experimental measurements reported in other literature shows good agreement between theory and field test. Frost and Huang therefore concluded that the improved unit provides a valid technique for analyzing the effects on chemical spray applications of:

- Flight path and prevailing wind direction;
- Meteorological measurements of temperature gradient, wind profile, relative humidity, etc.;
- Type and amount of adjuvant;
- Nozzle type, size, position, and distance from nozzle to target;
- Drop size distribution at the nozzle and on the ground; and
- Physical properties and quantity of active ingredients.

Steady Growth Noted in Home Use Survey

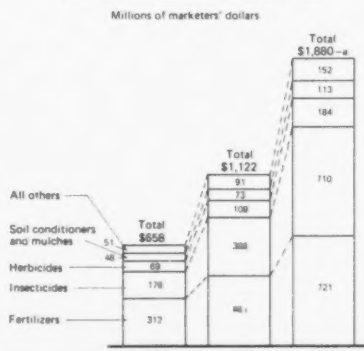
CONSUMERS in the U. S. spent \$1.1 billion in 1980 for pesticides, fertilizers, potting soils, and related chemicals for lawns, gardens, houseplants, and general household use, says a survey compiled by Charles H. Kline & Co., Inc. Fertilizers comprised 40% of the market, followed by insecticides at 36%.

The study projects that the market will grow slowly, 2.6% annually, and reach \$1.3 billion by 1985 in constant

O. M. Scott in lawn fertilizers. Most of the remaining business was split among about 250 small, regional companies, although it was noted that several larger companies have made inroads through acquisitions or private labeling.

The Kline study, a revision of a 1976 survey, is available in two volumes, one centering on business analysis and the second on consumer/retailer profiles. 1006 pages in total, they are based on 1710 interviews. Further information on *Consumer Markets for Pesticide and Fertilizers 1981* and/or a companion survey, *Professional Markets for Pesticides and Fertilizers*, is available from C. H. Kline & Co., 330 Passaic Ave., Fairfield, NJ 07006.

FIGURE 1
ESTIMATED U.S. MARKETERS' SALES OF CONSUMER PESTICIDES AND FERTILIZERS 1975 TO 1985



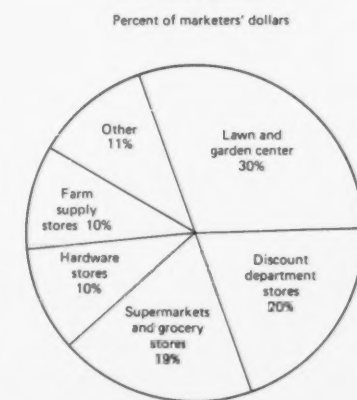
a - Assumes an average annual inflation rate of 8.0%

Source: C.H. Kline and Co.

dollars. Sales of household and outdoor insecticides are expected to increase most rapidly.

The study found that three companies dominated the overall market in 1980 with a 31% share: Chevron's Ortho Division controls the largest share in outdoor pesticides; S. C. Johnson & Son in household insecticides; and

FIGURE 2
ESTIMATED U.S. MARKETERS' SALES OF CONSUMER PESTICIDES AND FERTILIZERS BY RETAIL OUTLET 1980



Source: C.H. Kline and Co.

FARM CHEMICALS

JUNE • 1982



You Can't Think

Only Domestic--

It's a World Fertilizer Market

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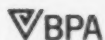
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Regional editions of this issue contain additional pages numbered 2 A1-A2 and 38 A1-A24. They follow Pages 2 and 38.

FARM CHEMICALS

For Details Circle No. 104 on Postcard—>

You Can't Think Only Domestic



Whether you're retailing fertilizers for application in Indiana or India, it will pay you to know how much fertilizer is being used in your country—and outside.

Action in world fertilizer markets not only affects those businesses which ship to or buy from foreign firms, but retailers as well. As international trade in fertilizers intensifies, knowing conditions in the world fertilizer market will help you to make good purchasing decisions.

By EDWIN M. WHEELER

World Nitrogen Markets Soar. As Dollar Rises, Foreign Buyers Back Off. Export Buyers Bullish on U.S. Phosphate Rock Purchases. Saskatchewan Potash Push Is On. Morocco Plans Phosphate Expansion.

Such headlines occur almost daily in U.S. fertilizer industry publications, but those mainly affected by such developments are the import/export companies and fertilizer producers. Right?

Not necessarily, particularly in the U.S. market where imports of potash provide about three-fourths of our domestic use and where exports of phosphates approach 40% of our production.

Action in world fertilizer markets affects not only those U.S. businesses which ship to or buy from foreign firms, but U.S. retailers, as well. These developments can send ripples . . . or tides . . . through the entire industry.

Diammonium phosphate, anhydrous ammonia, muriate of potash and most other fertilizer products in the U.S. retail inventories are marketed throughout the world. They are international commodities, much like grain and coal. As international fertilizer markets ebb and flow, so do value and availability of products to U.S. fertilizer retailers, whether in California or Georgia.

By the same token, fluctuations in the U.S. commodity market for grains and oilseeds influence not only the market for fertilizers in the U.S., but around the world, since the U.S. is the largest producer of farm products—and the largest single market for fertilizers, as well.

What does this mean for the U.S. fertilizer retailer? Many retailers already know the answer. They are the ones who watch U.S. import/export trends. They are the retailers who are aware of market calms and swells in overseas fertilizer production and demand. And they are the retailers who

are ready to take advantage of the market when conditions are best for them.

An example of world trade influences on U.S. fertilizer production is easily seen in the phosphate rock trends shown in Figure 1. U.S. rock production has grown from 29 million tons in 1969–70 to 62 million in 1980–81, while exports have climbed from 11 million to as high as 17 million in 1979–80 with a drop back to 14 million in 1980–81. This decline has continued in the current year, and has meant growing inventories of phosphate products in the U.S. and growing frustration for U.S. phosphate producers. The result, of course, has been market fluctuations here and in other countries and drastic production cuts at U.S. facilities.

Export and production of U.S. finished phosphate materials, such as the ammonium phosphates, although showing improvement throughout the 1980–81 year, also have begun to follow the export decline of phosphate rock in recent months. And, once again, the influence of world market action is reflected in domestic markets as well. But, as Figure 2 illustrates, the export market for these products has advanced in lock step with production of phosphoric acid through the 1981 fertilizer year.

Import Shifts

Every retailer is aware that the U.S. farmer is dependent upon sources outside our borders for about 75% of U.S. potash fertilizer supplies. The bulk of this tonnage is imported from Canada, but other countries, such as Israel, Spain, East and West Germany, Russia, and Britain, also provide the U.S. with potash.

This net import position for potash has existed for more than 20 years, since 1962.

A much more recent development, shown in Figure 3, is the gradual trade balance shift in U.S. import and ex-

Mr. Wheeler is president of The Fertilizer Institute, Washington, DC.

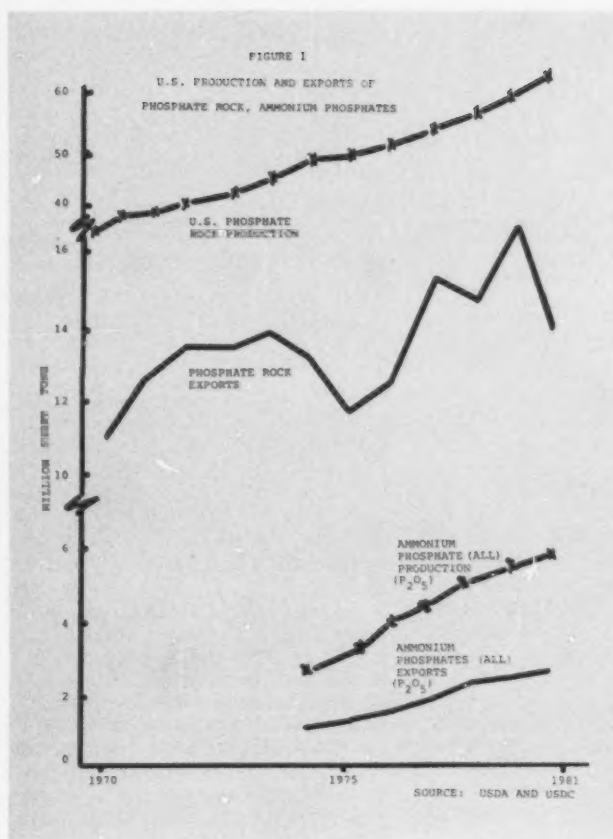


FIGURE 1

port of nitrogen products. For a number of years, the U.S. was a dominant net exporter of nitrogen materials. During the seventies this position has been challenged by growing nitrogen imports. In fertilizer years 1975, 1977 and '78, in fact, the U.S. was a net importer of nitrogen, and the balance point has been approached on a number of other years, as well.

Customer Shifts

Changes also occurred in countries which make up the top buyers and the top suppliers of U.S. fertilizers.

Neighboring countries of Canada and Mexico have been consistent buyers of U.S. fertilizers, as have principal countries of Asia and Europe, for many years. U.S. firms also have been good customers of other countries for major fertilizer items.

The top nitrogen suppliers to the U.S. in 1981 are shown, as an exam-

ple, in Figure 4. Top buyers of U.S. fertilizers are shown in Figure 5.

A factor that has become increasingly important in the last few years has been the influential swing in international fertilizer markets attributed to "third world" or developing nations.

For instance, in fertilizer year 1980, Brazil purchased more than 3.5 million tons of U.S. fertilizer products. The following year that figure dropped by nearly 30% to 2.6 million tons. Korea, a major buyer of U.S. phosphate rock purchased just over 2 million tons of the raw product in FY 1980. In 1981, purchase: dropped 15% to 1.7 million short tons.

Another "swinger" has been Poland. Its purchases of phosphate rock dropped from 934,000 tons in 1980, to 731,000 in 1981, to zero in the current year.

Virtually all South American and Central American countries have fluctuated

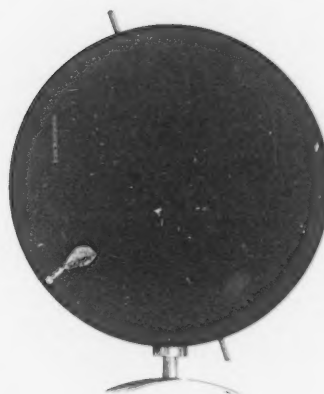


FIGURE 2

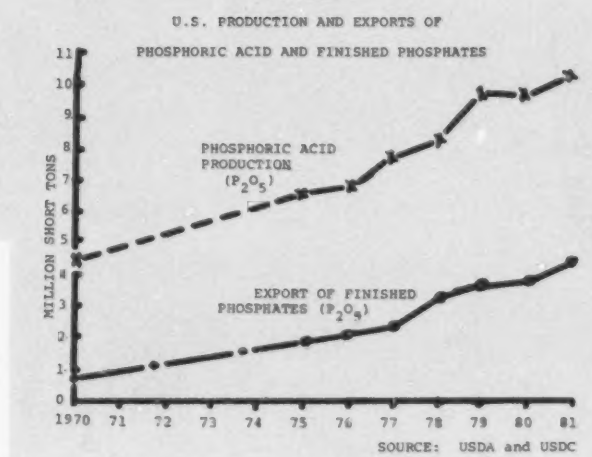


FIGURE 2

tuated downward in 1981 and current year demand for U.S. fertilizers from earlier years.

The point, of course, is that the developing countries are playing an ever-expanded role in influential "swings" in the international fertilizer market. This phenomenon will continue as the economics and politics of these countries ebb and flow, and will be a major factor in world supply and demand for raw materials and finished goods and products.

Summary

Like other international commodities, major fertilizers have international markets. In the U.S., there is no insulation from these markets... for fertilizers enter and leave the U.S. duty free.

This trade is important. It provides the U.S. a good portion of its supply of several key fertilizers. It also pro-

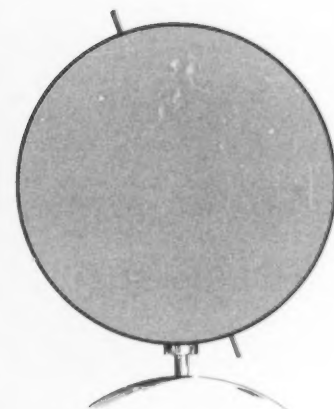
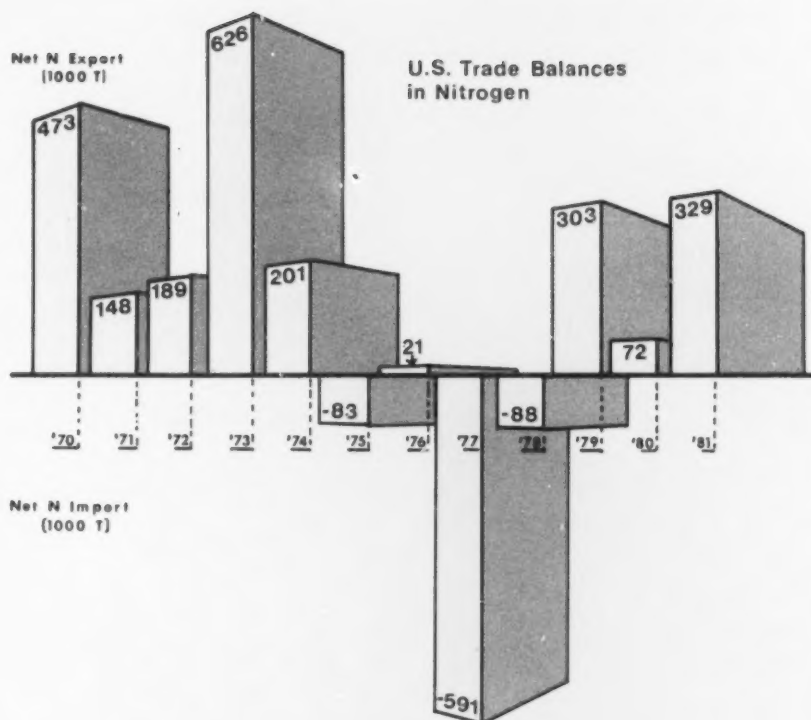


FIGURE 3



FIGURE 4

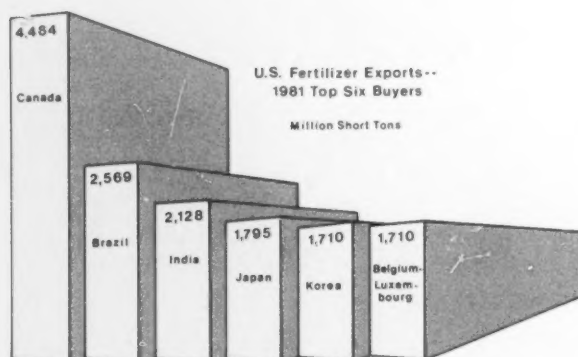


FIGURE 5

vides a healthy balance of trade dollarwise.

In 1981, the value of 29.7 million tons of exported fertilizers was \$3.2 billion. The value of 14.3 million tons of imports was \$1.3 billion, thus providing a positive trade balance of \$1.9 billion. In other words, we exported more than \$2 worth of fertilizer for each \$1 imported this past year.

There is one other part of the export/import picture worthy of citing. While the U.S. has no tariffs on fertilizer imports, most countries to which the U.S. export fertilizers have duties on these products. Such duties, typically in the range of 5 to 20% on products (including freight costs), go as high as 60 and 82%.

U.S. exports and imports of fertil-

izer are vital to assure U.S. domestic suppliers as well as the fiscal health of domestic producers. Fertilizers, whether from mineral or hydrocarbon resources, are dependent on wherever, millions of years ago, "Mother Nature" distributed her supplies. Some countries obviously have great reserves, others have little or none. Thus, trade is a distribution of inputs absolutely essential to food and fiber production, whether in India or Indiana.

As use of the critical materials essential for increased crop production intensifies in the future, so will international trade of these products. Thus,

the retailer, again whether in India or Indiana, will become more dependent on conditions of the international fertilizer market. Action by dealers in one area toward heavy buying, or slack buying, will directly impact dealers in other areas.

There is an abundance of information today on international fertilizer trade. This "data bank" will grow, providing more instantaneous information, thus cutting reaction time. The well-informed, well-managed retail operation in the future will improve its focus; its picture of international developments with fertilizers.

Professional Consumption of Fertilizers, Pesticides is Billion Dollar Market

EIGHTEEN end use segments of the professional market consumed pesticides and fertilizers valued at \$1.1 billion in 1981. Residential and commercial lawncare firms are the largest end use with consumption of \$185 million, followed by golf courses, pest control operators, landscaping firms, horticultural companies, roadways, educational facilities, water manage-

ment groups, and a variety of other professional end users, a new survey from Charles H. Kline & Co. shows.

Pesticides, comprised of herbicides, insecticides, fungicides, rodenticides, and other products are the leading category with 1981 sales estimated at \$664 million. Herbicides are the leader here and are used principally by roadways, railroads, electric utilities, and industrial weed control, according to *Professional Markets for Pesticides and Fertilizers*. Insecticides, ranking second, are sold chiefly to structural pest control operators but also to land-

scapers and lawn service companies, mosquito-control groups, and horticultural companies. Fungicides, aquatic pesticides, rodenticides, growth regulators, and nematocides make up the balance of pesticide consumption.

Fertilizers, which account for over one-third of the market, rank next in sales after pesticides, Kline & Co. reports. They serve nearly all end-use segments but are most important for golf courses, landscaping, and lawn service. **Soil conditioners** represent the balance of sales.

About half of these sales are held by 20 major suppliers. Dow is the largest with insecticides as its primary product. Du Pont, the largest supplier of herbicides to the professional market, ranks second in sales.

According to the Kline & Co. survey, this segment of business holds important opportunities for alert suppliers. For example, they predict that government pressures will threaten the use of various pesticides including organophosphates, and replacements must be developed. Other opportunities center around improved products, including more effective growth regulators; packaging designed for reduced handling, measuring, and spillage.

"Our C-III takes only 10 minutes to handle what was a 3-hour job."

...Chuck Moss, The Garst Company, Coon Rapids, Iowa.



If you talk to a dozen fertilizer and chemical dealers with a C-III Computer Control Center, you'll most likely hear a dozen different reasons for satisfaction with the system. Some mention Localized Fertilizer Recommendations. Others talk about Prescription Fertilizer Formulations. Frequent praise is given to Variable Application Considerations.

Chuck Moss starts with Accurate Inventory Control. "I was spending 3 hours at the end of the month working on our chemical inventory. Now I can get the job done in only 10 minutes with our C-III," Chuck states.

What will be your reason for satisfaction with a C-III Computer Control Center? Give us a call. We'll have your reason.

C-III COMPUTER CONTROL CENTER

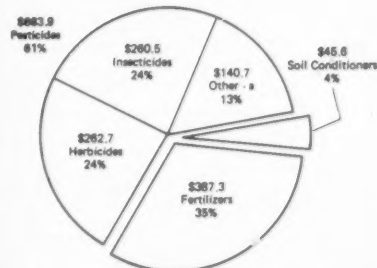
For 1981 fertilizer operations.

PSI

Professional Services, Inc.

Post Office Box 2012
Kearney, Nebraska 68847
Phone: 402-237-5995

U.S. PROFESSIONAL CONSUMPTION OF PESTICIDES AND FERTILIZERS BY PRODUCT 1981
Millions of dollars



a - Includes fungicides, aquatic pesticides, rodenticides, growth regulators, nematocides, and avicides.

MAJOR SUPPLIERS OF PESTICIDES AND FERTILIZERS TO PROFESSIONAL MARKETS RANKED BY DOLLAR SALES 1981

Company	Chief products
Dow	I
DuPont	H
O. M. Scott	F
Velsicol	I
Ciba-Geigy	H
Monsanto	H
Union Carbide	I
Estech	F
U.S. Steel (USG Agrichemicals)	F
Diamond Shamrock	H
Chevron	I
Lebanon	F
Southern Mill Creek	I
Sierra	I
NCH	I
Lakeshore	F
Hopkins	I
Occidental	F
Fisons-Western Peat	SC
Elanco	H

Code: F-Fertilizers
H-Herbicides
I-Insecticides
SC-Soil conditioners

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